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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/996,200
Filing Date: November 28, 2001
Appellant(s): GEORGIEV, TODOR G.

Mandy Jubang
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/13/2006 appealing from the Office action mailed 10/12/2004.

The Examiner's Answer issued 3/21/2005 has been vacated.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claim 1-6, 10-21 and 25-39.

Claims 7-9 and 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

In 4, Claims 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(7) Claims Appendix

Claim 31 contain(s) substantial errors as presented in the Appendix to the brief. The amendment filed 12/29/2003 does not have the limitation "the first image being related to an area on a distortion grid" in line 3. Accordingly, claim 31 is correctly written in the Appendix to the Examiner's Answer:

31. A computer program product having instructions stored in a computer readable medium, containing instructions to cause a computer to:

display a first image on a canvas;

responsive to an input device controlled by a user, select an area of the first image;

responsive to a selection by the user from a menu, extract at least one component of a distortion from the area; and

responsive to movement and location of a cursor controlled by the user, apply the at least one component to a second area of the first image.

(8) Evidence Relied Upon

Thomas et al.,"Animating Direct Manipulation Interfaces" Proceedings of the 8th annual ACM symposium on User interface and software technology, Nov 14-17, 1995, pp. 3-12.

Foley et al. "Computer Graphics: Principles and Practice", 2nd Edition, Addison Wesley. July 1997, Page 206, 1104, 1108-1109.

6,215,915	Reyzin	4-2001
6,157,750	Choi et al	12-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

9.1 Claims 1-3, 10-11, 13-18, 25-26, 28-32, 34-35 and 37-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Thomas et al. (ACM, Nov 1995).

As per claim 1,Thomas et al., hereinafter Thomas, discloses a method comprising:

in response to user action on a canvas, selecting at least one area of a first image which relates to an area on a distortion grid (Figure 3 where a corner of the object is grabbed for scaling, and the surrounding area could be distorted);

using a plurality of points local to the at least one area to calculate a distortion local to the area (Figure 3 where the area close to the selected corner is distorted; the distortion is not limited to one point but to a plurality of points local to the area);

extracting at least one component of the distortion (the scaling factor for Figure 3 is considered a component of distortion); and

applying the at least one component to a second area of the first image (Figure 3 where the other corners are also distorted).

9.2 As per claim 2, Thomas demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses the at least one component of the distortion is one of displacement, rotation, magnification, skew and directional scaling (Figure 3 has scaling as an example).

9.3 As per claim 3, Thomas demonstrated all the elements as applied to the rejection of dependent claim 2, supra, and further discloses the extracting comprises calculating an affine transform from the plurality of points (Figure 3 where scaling is one component of affine transformation and "The original Transformation object supported only affine transformation such as rotation, scaling, and translation", page 7, last paragraph).

9.4 As per claim 10, Thomas demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses wherein a user selects the at least one component ("The editor supports the creation of simple figures such as lines and polygons, and it allows simple editing operations such as moving, scaling, and rotating. Figure 1 shows a screen image of the editor being used to move an object.", page 4, column 2, line 43-47).

9.5 As per claim 11, Thomas demonstrated all the elements as applied to the rejection of dependent claim 10, supra, and further discloses wherein the user selects the at least one component from a menu displayed on a user interface (page 5, Figure 1).

9.6 As per claim 13, Thomas demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses the applying is to an entire image (Figure 1 where the entire area can be applied).

9.7 As per claim 14, Thomas demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses the applying is to a second image ("The editor supports the creation of simple figures such as lines and polygons", page 4, line 43-44).

9.8 As per claim 15, Thomas demonstrated all the elements as applied to the rejection of dependent claim 14, supra, and further discloses the second image is different from the first image ("The editor supports the creation of simple figures such as lines and polygons", page 4, line 43-44, where lines and polygons are different).

9.9 As per claim 16, Thomas discloses a computer program product, disposed in a computer readable medium, having instructions to cause a computer to:

using a plurality of points surrounding a first area of an image related to an area in a distortion grid, calculate at least one component of a distortion at the first area (Figure 3 where a corner of the object is grabbed for scaling and the area close to the selected corner is distorted; since the distortion is not limited to one point but to a plurality of points local to the area); and

apply the at least one component of the distortion to a second area of the image (Figure 3 where the other corners are also distorted).

9.11 As per claim 17, Thomas demonstrated all the elements as applied to the rejection of independent claim 16, supra, and further discloses the at least one

component of the distortion is one of displacement, rotation, magnification, skew and directional scaling (Figure 3 has scaling as an example and "The original Transformation object supported only affine transformation such as rotation, scaling, and translation", page 7, last paragraph).

9.12 As per claim 18, Thomas demonstrated all the elements as applied to the rejection of dependent claim 17, supra, and further discloses instructions to cause a computer to calculate an affine transform from the plurality of points (Figure 3 where scaling is one component of affine transformation and "The original Transformation object supported only affine transformation such as rotation, scaling, and translation", page 7, last paragraph).

9.13 As per claim 25, Thomas demonstrated all the elements as applied to the rejection of independent claim 16, supra, and further discloses wherein a user selects the at least one component ("The editor supports the creation of simple figures such as lines and polygons, and it allows simple editing operations such as moving, scaling, and rotating. Figure 1 shows a screen image of the editor being used to move an object.", page 4, column 2, line 43-47).

9.14 As per claim 26, Thomas demonstrated all the elements as applied to the rejection of dependent claim 25, supra, and further discloses wherein the user selects the at least one component from a menu displayed on a user interface (page 5, Figure 1).

9.15 As per claim 28, Thomas demonstrated all the elements as applied to the rejection of independent claim 16, supra, and further discloses the applying is to an entire image (Figure 1 where the entire area can be applied).

9.16 As per claim 29, Thomas demonstrated all the elements as applied to the rejection of independent claim 16, supra, and further discloses the applying is to a second image ("The editor supports the creation of simple figures such as lines and polygons", page 4, line 43-44).

9.17 As per claim 30, Thomas demonstrated all the elements as applied to the rejection of dependent claim 14, supra, and further discloses the second image is different from the first image ("The editor supports the creation of simple figures such as lines and polygons", page 4, line 43-44, where lines and polygons are different).

9.18 As per claim 31, Thomas discloses a computer program product having instructions stored in a computer readable medium, containing instructions to cause a computer to:

display a first image on a canvas (Figure 1);

responsive to an input device controlled by a user, select an area of the first image (Figure 3 where a corner of the object is grabbed for scaling);

responsive to a selection by the user from a menu, extract at least one component of a distortion from the area (the scaling factor for Figure 3); and

responsive to movement and location of a cursor controlled by the user, apply the at least one component to a second area of the first image (Figure 3 where the other corners are also distorted).

9.19 As per claim 32, Thomas demonstrated all the elements as applied to the rejection of independent claim 31, supra, and further discloses wherein the input device is a mouse ("the part of the object that is "grabbed" is controlled by the mouse", page 5, line 5-6).

9.20 As per claim 34, Thomas demonstrated all the elements as applied to the rejection of independent claim 31, supra, and further discloses the at least one component of the distortion is one of displacement, rotation, magnification, skew and directional scaling (Figure 3 has scaling as an example and "The original Transformation object supported only affine transformation such as rotation, scaling, and translation", page 7, last paragraph).

9.21 As per claim 35, Thomas demonstrated all the elements as applied to the rejection of independent claim 31, supra, and further discloses instructions to cause a computer to calculate an affine transform from the plurality of points (Figure 3 where scaling is one component of affine transformation and "The original Transformation object supported only affine transformation such as rotation, scaling, and translation", page 7, last paragraph).

9.22 As per claim 37, Thomas demonstrated all the elements as applied to the rejection of independent claim 31, supra, and further discloses the applying is to an entire image (Figure 1 where the entire area can be applied).

9.23 As per claim 38, Thomas demonstrated all the elements as applied to the rejection of independent claim 16, supra, and further discloses the applying is to a

second image ("The editor supports the creation of simple figures such as lines and polygons", page 4, line 43-44).

9.24 As per claim 39, Thomas demonstrated all the elements as applied to the rejection of dependent claim 31, supra, and further discloses the second image is different from the first image ("The editor supports the creation of simple figures such as lines and polygons", page 4, line 43-44, where lines and polygons are different).

Claim Rejections - 35 USC § 103

9.25 Claims 4, 19 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas et al. as applied to claim 1 above, and further in view of Reyzin (6,215,915).

9.26 As per claim 4, Thomas demonstrated all the elements as applied to the rejection of dependent claim 3, supra.

Thomas discloses a method of distorting an area of an image using affine transformation. It is noted that Thomas does not explicitly disclose the extracting further comprises decomposing the affine transform into a translation and a linear transform matrix, however, this is known in the art as taught by Reyzin. Reyzin discloses a method of transformation in which the affine transformation is decomposed into a translation part and a linear transform matrix (column 3, line 15-30 where (Xo,Yo) is the translation part and M is the transform matrix).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Reyzin into Thomas because Thomas discloses a method of distorting an area of an image using affine

transformation and Reyzin discloses the affine transformation can be decomposed into two components in order to be able to better analyze the transformation.

9.27 As per claim 19, Thomas demonstrated all the elements as applied to the rejection of dependent claim 18, supra.

Thomas discloses an instruction of a method of distorting an area of an image using affine transformation. It is noted that Thomas does not explicitly disclose the extracting further comprises decomposing the affine transform into a translation and a linear transform matrix, however, this is known in the art as taught by Reyzin. Reyzin discloses a method of transformation in which the affine transformation is decomposed into a translation part and a linear transform matrix (column 3, line 15-30 where (Xo,Yo) is the translation part and M is the transform matrix).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Reyzin into Thomas because Thomas discloses a method of distorting an area of an image using affine transformation and Reyzin discloses the affine transformation can be decomposed into two components in order to be able to better analyze the transformation.

9.28 As per claim 36, Thomas demonstrated all the elements as applied to the rejection of dependent claim 35, supra.

Thomas discloses a method of distorting an area of an image using affine transformation. It is noted that Thomas does not explicitly disclose the extracting further comprises decomposing the affine transform into a translation and a linear transform matrix, however, this is known in the art as taught by Reyzin. Reyzin

discloses a method of transformation in which the affine transformation is decomposed into a translation part and a linear transform matrix (column 3, line 15-30 where (Xo,Yo) is the translation part and M is the transform matrix).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Reyzin into Thomas because Thomas discloses a method of distorting an area of an image using affine transformation and Reyzin discloses the affine transformation can be decomposed into two components in order to be able to better analyze the transformation.

9.29 Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas as applied to claim 1 above, and further in view of Foley et al. (Computer Graphics: Principles and Practice, 2nd Edition).

As per claim 5, Thomas demonstrated all the elements as applied to the rejection of dependent claim 3, supra.

Thomas discloses a method of distorting an area of an image using affine transformation. It is noted that Thomas does not explicitly disclose the extraction of magnification comprises calculating the determinant of a linear transform matrix, however, this is known in the art as taught by Foley et al., hereinafter Foley. Foley discloses that "the determinant of the matrix tells us ... how much the cube is expanded or contracted by the transformation, page 1104, line 2-3).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Foley into Thomas because Thomas discloses a method of distorting an area of an image and Foley discloses the

determinant of the transform matrix can be used to determine the magnification of the transform.

9.30 As per claim 6, Thomas demonstrated all the elements as applied to the rejection of dependent claim 3, supra.

Thomas discloses a method of distorting an area of an image using affine transformation. It is noted that Thomas does not explicitly disclose the extraction of rotation comprises calculating an angle from the elements of a linear transform matrix, however, this is known in the art as taught by Foley. Foley discloses that in affine transformation an angle of rotation from the transformation can be derived (page 203, the whole page).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Foley into Thomas because Thomas discloses a method of distorting an area of an image and Foley discloses the angle of the rotation can be calculated from the transformation in order to determine the amount of rotation due to the transformation.

9.31 Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas and Reyzin as applied to claim 19 above, and further in view of Foley.

As per claim 20, Thomas and Reyzin demonstrated all the elements as applied to the rejection of dependent claim 19, supra.

Thomas and Reyzin disclose a method of distorting an area of an image using affine transformation. It is noted that Thomas and Reyzin do not explicitly disclose the one component of the distortion is a magnification amount, and the instructions to

cause the computer to decompose the affine transformation further comprise instructions to calculate the determinant of the linear transform matrix, however, this is known in the art as taught by Foley. Foley discloses that "the determinant of the matrix tells us ... how much the cube is expanded or contracted by the transformation, page 1104, line 2-3).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Foley into Thomas and Reyzin because Thomas and Reyzin disclose a method of distorting an area of an image and Foley discloses the determinant of the transform matrix can be used to determine the magnification of the transform.

9.32 As per claim 21, Thomas and Reyzin demonstrated all the elements as applied to the rejection of dependent claim 19, supra.

Thomas and Reyzin disclose a method of distorting an area of an image using affine transformation. It is noted that Thomas and Reyzin do not explicitly disclose the one component of the distortion is an angular rotation amount, and the instructions to cause the computer to decompose the affine transformation further comprise instructions to calculate an angle from the elements of the linear transform matrix, however, this is known in the art as taught by Foley. Foley discloses that in affine transformation an angle of rotation from the transformation can be derived (page 203, the whole page).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Foley into Thomas and Reyzin

because Thomas and Reyzin disclose a method of distorting an area of an image and Foley discloses the angle of the rotation can be calculated from the transformation in order to determine the amount of rotation due to the transformation.

9.33 Claims 12, 27 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas et al. as applied to claim 1 above, and further in view of Choi et al. (6,157,750).

As per claim 12, Thomas demonstrated all the elements as applied to the rejection of independent claim 1, supra.

Thomas discloses a method of distorting an area of an image using affine transformation. It is noted that Thomas does not explicitly disclose a user selects the area for the applying by the location of a virtual brush, however, this is known in the art as taught by Choi et a., hereinafter Choi. Choi discloses a method of transforming a basic shape element of a character by using a virtual brush (Figure 2 where the brush selects area to be transformed).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Choi into Thomas because Thomas discloses a method of distorting an area of an image using affine transformation and Choi discloses the transformation area can be selected by using a virtual brush in order to select a desired amount of transformation area.

9.34 As per claim 27, Thomas demonstrated all the elements as applied to the rejection of independent claim 16, supra.

Thomas discloses a method of distorting an area of an image using affine transformation. It is noted that Thomas does not explicitly disclose a user selects the area for the applying by the location of a virtual brush, however, this is known in the art as taught by Choi. Choi discloses a method of transforming a basic shape element of a character by using a virtual brush (Figure 2 where the brush selects area to be transformed).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Choi into Thomas because Thomas discloses a method of distorting an area of an image using affine transformation and Choi discloses the transformation area can be selected by using a virtual brush in order to select a desired amount of transformation area.

9.35 As per claim 33, Thomas demonstrated all the elements as applied to the rejection of independent claim 1, supra.

Thomas discloses a method of distorting an area of an image using affine transformation. It is noted that Thomas does not explicitly disclose a user selects the area for the applying by the location of a virtual brush, however, this is known in the art as taught by Choi. Choi discloses a method of transforming a basic shape element of a character by using a virtual brush (Figure 2 where the brush selects area to be transformed).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Choi into Thomas because Thomas discloses a method of distorting an area of an image using affine transformation and

Choi discloses the transformation area can be selected by using a virtual brush in order to select a desired amount of transformation area.

(10) Response to Argument

Group I: (claims 1-2, 10-11, 16-17, 25-26, 31-32 and 34)

As per claim 1, applicant alleges Thomas does not teach calculating a distortion local to an area of an image, extracting a component of the distortion and applying the extracted component to a different area of the image. In reply, the examiner notes that when a corner point of the graph (Figure 3, 5 and 6) is grabbed, the whole corner portion is distorted; the distortion is not limited to one point but to an area local to the corner area ("the part of the object that is grabbed is controlled by the mouse" (page 5, 2nd paragraph, line 5-6). As for applying the extracted component to a different area of the image, for the scaling operation, when one corner is distorted, all four corners are distorted in similar fashion (see Figure 3). Thus, the prior art teaches the claimed limitation.

Applicant alleges that Thomas' warp vector is not the distortion grid as claimed. In reply, examiner notes that the specification of the application explains the distortion grid is a grid of vectors (page 2, line 11). It does not explain how the vectors are positioned except that each corresponds to a single point in an image. Figure 7 of Thomas clearly shows its warp vector has the property of applicant's vector- depicting changes from the original image point to the distorted point.

Applicant alleges Thomas does not extract a component of the distortion and apply it to a second area. In reply, examiner considers the claim limitation "at least one

component" includes the possibility of including all of the components. Figure 3 of Thomas shows the other three corners are similarly distorted (with at least one component of distortion) when one corner is distorted.

Group II: (claims 3, 18 and 35)

Applicant alleges that Thomas does not disclose calculating an affine transformation from a plurality of points. In reply, examiner considers an affine transformation inherently involves a plurality of points (since a matrix is used, each element of the matrix represent a transformation of a point) and an affine transformation is a calculation process.

Group III. (claims 13, 28 and 37)

Applicant alleges that Thomas does not disclose the applying is to an entire image. In reply, examiner considers the entire object in Figure 1 is distorted (Figure 3 or 4 also meet the claim limitations).

Group IV. (claims 14, 15, 29, 30, 38 and 39)

Applicant alleges that Thomas does not disclose the applying is to a second image. In reply, examiner considers the statement in "We have applied these principles to the task of animating the interaction with graphical objects in a simple drawing editor. The editor supports the creating of simple figures such as lines and polygons" (page 4, paragraph 7, line 2-5) implies a plurality of objects can exist on a display. Although Figure 1 only display one object, a plurality of objects can also be display and edited.

Group V. (claims 4, 19 and 36)

Applicant alleges neither Thomas nor Reyzin disclose extracting a component of a distortion by calculating an affine transformation from a plurality of points calculating an affine transformation from a plurality of points. In reply, the examiner relies on Thomas to show distortion to a plurality of points (points local to the gab corner) and Reyzin for the affine transformation, and Reyzin shows in column 3, line 15-30 that his affine transformation involves two parts: (Xo,Yo) is the translation part and M is the transformation matrix.

Group VI. (claims 5 and 20)

Applicant alleges Foley is silent about calculating an affine transform from a plurality of points. In reply, examiner notes Thomas discloses distortion can be performed by using affine transformation (page 7, last paragraph) and the distortion involves a plurality of points (points local to the gab corner). Foley provides the knowledge that magnification factor can be derived by calculating the determinant of a transform matrix.

Group VII. (claims 6 and 21)

As per claim 6, applicant's alleged Thomas or Foley do not teach extracting a rotation component of a distortion by calculating an angle from the elements of a linear transformation. In reply, examiner considers the θ in Foley teaching (page 203) as angle of rotation. The angle can be derived by simple mathematical manipulation.

Group VIII (claims 22-24) are objected to, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Group IX. (claims 12, 27 and 33)

As per claims 12, 27 and 33, applicant alleges Choi is silent about using a virtual brush to perform claim 1. In reply, examiner notes since virtual brush is used for pointing purpose, it would have been obvious to one of ordinary skill in the art to use it to replace the mouse for pointing purpose.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Ryan Yang
May 10, 2006

Conferees:

Michael Razavi

Richard Hjerpe